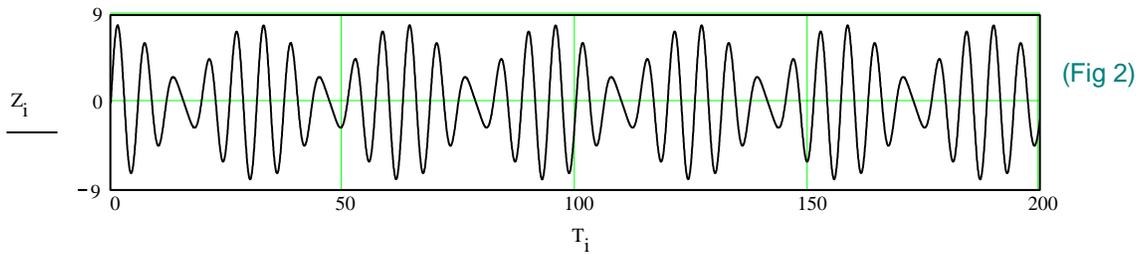
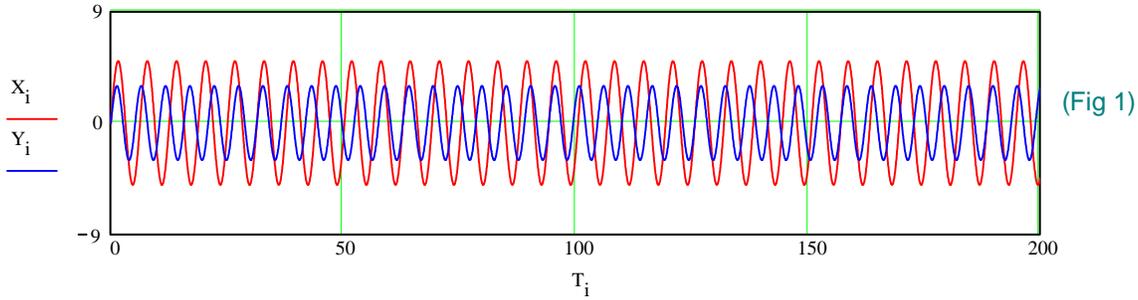


NAMES _____

FAST

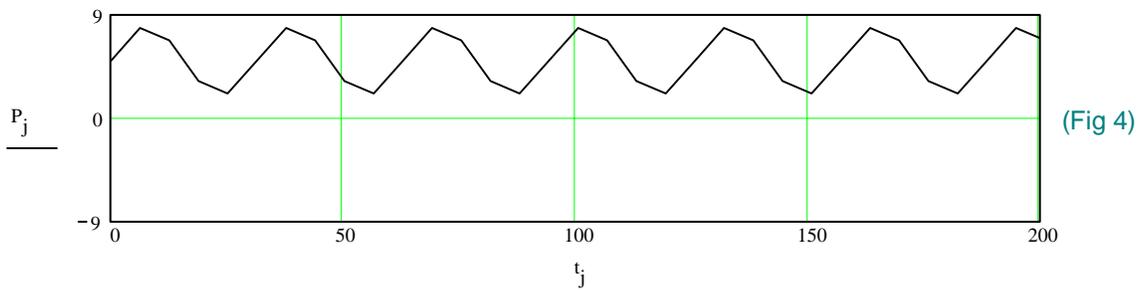
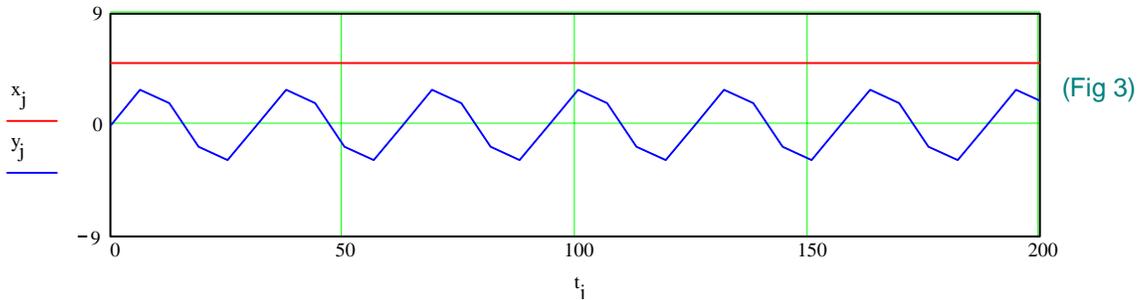
Note: ω_1 is the reference frequency and ω_2 is the target frequency.

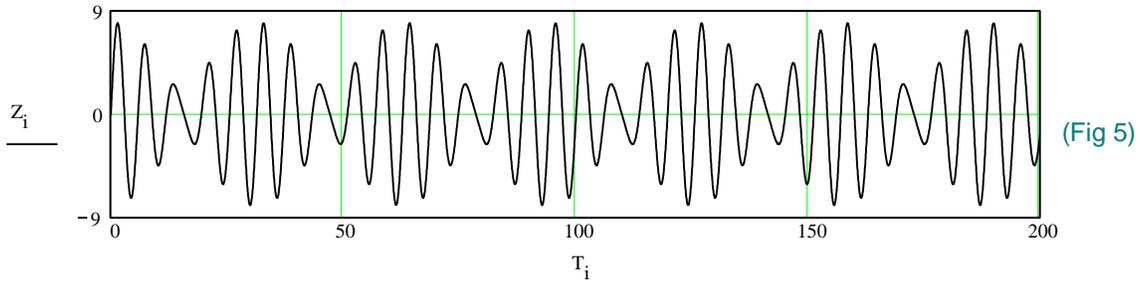
$$A_1 := 5 \quad A_2 := 3 \quad \omega_1 := 1 \quad \omega_2 := 1.2 \quad \text{timebins} := 5000 \quad i := 0, 1 \dots (\text{timebins} - 1) \quad T_i := \frac{i}{25}$$
$$X_i := A_1 \cdot \sin(\omega_1 \cdot T_i) \quad Y_i := A_2 \cdot \sin(\omega_2 \cdot T_i) \quad Z_i := X_i + Y_i$$



$$\phi := \frac{\pi}{2} \quad j := 0, 1 \dots 399 \quad t_j := 2 \cdot \pi \cdot j$$

$$x_j := A_1 \cdot \sin(\omega_1 \cdot t_j + \phi) \quad y_j := A_2 \cdot \sin(\omega_2 \cdot t_j) \quad P_j := x_j + y_j$$





$$f_{\text{nyquist}} := \left| \frac{1}{T_1 - T_2} \right| \quad \text{freqbins} := \frac{\text{timebins}}{2} \quad k := 0, 1 \dots \text{freqbins} - 1 \quad K := 0, 1 \dots 250$$

$$\text{Freq}_K := K \cdot \frac{\left(\frac{1}{4 \cdot \pi} \right)}{200} \cdot 2 \cdot \pi \quad \text{freq}_k := k \cdot \frac{f_{\text{nyquist}}}{\text{freqbins}} \cdot 2 \cdot \pi \quad \xrightarrow{\quad} \quad \xrightarrow{\quad}$$

$$f := (|\text{cfft}(Z)|)^2 \quad F := (|\text{cfft}(P)|)^2$$

